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Myhre

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[54] PRESSURE-BOOST DEVICE FOR
DOWNHOLE TOOLS

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Related U.S. Application Data

[63] Continuation of Ser. No. 514,876, Aug. 14, 1995, abandoned.

[51] Int. Cl.⁶ E21B 23/04

[52] U.S. Cl. 166/106; 166/243

[58] Field of Search 166/243, 72, 106

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[57] ABSTRACT

A pressure-boosting apparatus particularly amenable for use in downhole applications is disclosed. The pressure-boosting apparatus employs an unbalanced piston which is initially fixated in a run-in position. The piston has a flowpath therethrough in which is mounted a check valve. Initially, pressure is applied to above and below the piston which results in an unbalanced force on the piston due to its configuration. Flow to the tool initiates its actuation at this time. When the unbalanced force reaches a predetermined level, the piston is no longer fixated to the housing and begins to accelerate. Acceleration of the piston closes the check valve due to the sudden decrease in pressure behind the check valve and an increase in pressure in front of the check valve as the fluid volume in front of the piston is compressed. Due to the proportional relationship between pressure and area, a magnification of force originally delivered by the pump is achieved for completion of the setting of a downhole tool such as a packer or bridge plug or the like.

15 Claims, 1 Drawing Sheet

